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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/774,046	02/05/2004	Attila Bilgic	1890-0043	4990
<div>7590 03/20/2007 Maginot, Moore &amp; Beck LLP Chase Tower Suite 3250 111 Monument Circle Indianapolis, IN 46204-5109</div>			<div>EXAMINER TRAN, KHANH C</div>	
			<div>ART UNIT 2611</div>	<div>PAPER NUMBER</div>
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		03/20/2007	PAPER	

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

**Office Action Summary**

Application No.

10/774,046

Applicant(s)

BILGIC ET AL.

Examiner

Khanh Tran

Art Unit

2611

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 05 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 26-41 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 33 and 34 is/are allowed.
- 6) ☒ Claim(s) 26,28-31,35,39 and 40 is/are rejected.
- 7) ☒ Claim(s) 27,32,36-38 and 41 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 February 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

1. The Preliminary Amendment filed on 02/05/2004 has been entered. Claims 26-41 are pending in this Office action.

### *Drawings*

2. The drawings are objected to because **"the unlabeled boxes in FIGS. 1, 3 and 5-8 shown in the Drawings should be provided with descriptive text labels"**. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the

applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 26, 28-31, 35 and 39-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reial U.S. Patent 7,142,586 B2.

Regarding claim 26, in column 5 lines 35-67, Reial teaches in FIG. 4 a delay estimation system 400 including a path searcher module 402, a tuning fingers module 404, an average **power delay profile** (PDP) buffer 406 and a peak detection module 408. The delay estimation system 400 receives received samples as shown in FIG. 4.

The PDP estimate from each path searcher and tuning finger pass is added into an average PDP estimate accumulated from previous passes. The PDP buffer 406 is used to store the average PDP estimate, as well as timing and other types of information regarding the estimates, including the timing of the previous update for each delay value in the search window; see column 5 lines 20-35.

In column 5 lines 55-65, Reial teaches that peak detection module 408 detects peaks in the average PDP stored in the average PDP buffer.

Reial does not specifically disclose a data transmission path profile based upon the at least one peak detected as set forth in the application claim.

Further teachings disclose that the peak detection module 408 also uses the average PDP buffer to provide path tracking or mapping of a particular path to a specific peak position in the reported list of peaks; see column 5 lines 60-65. Because the peak detection module 408 also provides path tracking or mapping of a particular path, one of ordinary skill in the art at the time the invention was made would have recognized that the peak detection module 408 performs equivalent step of determining the data transmission path profile.

Reial does not explicitly disclose the step of suppressing the at least one shadow transmission path as set forth in the application claim.

In column 5 lines 60-65, Reial teaches the peak detection module 408 also uses the average PDP buffer to provide path tracking or mapping of a particular path to a specific peak position in the reported list of peaks. In column 10, lines 20-35, because Reial suggests in some embodiments, a threshold condition is imposed as shown in FIG. 2, one of ordinary skill in the art at the time the invention was made would have recognized that multipath components below the threshold are suppressed.

Referring to FIG. 4, in column 5 lines 45-65, the detected peaks are then reported as areas where a multipath component exists and the tuning fingers module 404 is to provide PDP estimate updates for the regions where presently detected paths exist based on the prior searches of the path searcher module.

Regarding claim 28, in column 5 lines 20-30, Reial teaches that in some embodiments, the PDP estimate from each path searcher and tuning finger pass is added into an average PDP estimate accumulated from previous passes. A buffer is used to store the average PDP estimate, as well as timing and other types of information regarding the estimates, including the timing of the previous update for each delay value in the search window. The average PDP buffer thereafter serves as a reliable source of control information to the other stages of the delay estimation function, including peak detection, tuning finger activation, path searcher activation, and search window positioning. In column 10 lines 20-25, Reial further teaches application of thresholding as disclosed in FIG. 2.

Regarding claim 29, as recited in claim 28 rejection, Reial further teaches application of thresholding as disclosed in FIG. 2. In view of that, peak detection module 408 detects peaks in the average PDP stored in the average PDP buffer above the detection threshold as shown in FIG. 2.

Regarding claim 30, Reial does not explicitly teach the step of adaptively selecting the first threshold as claimed in the application claim.

In column 11 lines 40-50, see also FIG. 4, Reial further teaches that in some embodiments, the average PDP may also be used by the correlation trigger module 412 to detect threshold events. The detection of the threshold events may then be used to initiate an unscheduled path search in order to update the PDP estimate. Because of

the detection of threshold events, new threshold condition need to be updated; therefore, it would have been obvious for one of ordinary skill in the art at the time the invention was made to modify Reial teachings to adaptively set a new detection threshold based on detection of threshold events.

Regarding claim 31, in column 9 lines 25-40, Reial teaches estimation of mean interference power provided by the RAKE fingers. Thresholding reduces the biasing effect from interference-induced entries in the average PDP.

Regarding claim 35, claim is rejected on the same ground as for claim 26 because of similar scope. Furthermore, the path searcher module 402 is configured to compile a current delay profile for the channel based on the channel estimate; see column 4 lines 25-40. The peak detector module 408 is coupled to path searcher module 402 to detect peaks in the average delay profile and to track the peaks over time; see column 4 lines 35-43. In some embodiments, a threshold condition is imposed to select peaks as shown in FIG. 2. In column 5 lines 45-55, the tuning finger module 404 provide power delay profile estimate updates for the regions where detected paths exist based on the prior searches of the path searcher module.

Regarding claim 39, as recited in claim 2 rejection, in some embodiments, a threshold condition is further imposed as shown in FIG. 2.

In column 11 lines 40-50, see also FIG. 4, Reial further teaches that in some embodiments, the average PDP may also be used by the correlation trigger module 412 to detect threshold events. The detection of the threshold events may then be used to initiate an unscheduled path search in order to update the PDP estimate. Because of the detection of threshold events, new threshold condition (shown in FIG. 2) is need to be updated; therefore, it would have been obvious for one of ordinary skill in the art at the time the invention was made to modify Reial teachings to adaptively select the power level of the detection threshold based on detection of threshold events.

Regarding claim 40, claim is rejected on the same ground as for claim 31 because of similar scope.

***Allowable Subject Matter***

4. Claims 27, 32, 36-38 and 41 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

5. Claims 33-34 are allowed.

The following is a statement of reasons for the indication of allowable subject matter:



Regarding claim 33, claim is allowed over prior art of record because the cited reference does not teach or suggest *"a peak value detection device, operably coupled to the power delay profile determination unit and operable to detect peaks above a first threshold in a generated power delay profile" and "a data path determination unit operably coupled to the peak value detection unit and operable to generate a data transmission path profile as a function of peaks detected by the peak value detection device that are above a second threshold"*.

### **Conclusion**

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Atarashi et al. U.S. Patent Application Publication No. 2004/0071193 A1 discloses "Path Search Method, Channel Estimation Method And Communication Device".

Tamura U.S. Patent Application Publication No. 2003/0235241 A1 discloses "CDMA Demodulation Circuit, CDMA Mobile Communication Demodulation Method Used Therefor, And Storage Medium Recording Program Thereof".

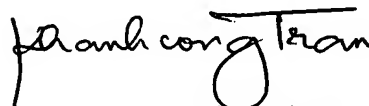
Klein et al. U.S. Patent Application Publication No. 2004/0132443 A1 discloses "Search Window Delay Tracking In Code Division Multiple Access Communication Systems".

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Khanh Tran whose telephone number is 571-272-3007. The examiner can normally be reached on Monday - Friday from 08:00 AM - 05:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel can be reached on 571-272-2988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

KCT

  
03/15/2007  
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